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Chemistry Report: IES/RCAT96-20

21 March, 1996

To: LCDR Ilene Byron
NOAA SSC

From: Charles B. Henry Jr.
Research Associate V

Re: Preliminary characterization of Buffalo 292 Barge Cargo Oil.

We received a reference sample identified as #4 Stbd. Tank F, Buffalo 292 Barge on 20 March, 1996 for GC/MS qualitative and quantitative analysis. The sample is a heavy black oil characteristic of a residual fuel oil. Figure 1 is the chromatographic profile comparison of the oil sample submitted for analysis and a "typical" Bunker C. Figure 2 is a histogram comparison of the quantified aromatic hydrocarbons in the spilled oil, North Slope Crude (NSC), a Bunker C oil, #6 fuel oil sampled from the Barge *Morris J. Berman* which sank off Puerto Rico, and the cargo oil from Buffalo 292. The aromatic hydrocarbons quantified are more abundant in the Buffalo 292 sample than either the oil from the crude oil from the *Exxon Valdez* spill or the *Morris J. Berman* incident. The mean Total Target aromatic hydrocarbon (TTAH) concentration was 73,000 ng/mg. For comparison, NSC has a TTAH concentration of 17,000 by our standard analysis method. Based on the aromatic hydrocarbon profile alone, the inherent toxicity of the IFO380 sample from Buffalo 292 would be greater than slightly weathered NSC. The biodegradation potential of this aromatic hydrocarbon enriched oil is predicted to be less than a typical bunker fuel oil; therefore, the spilled oil is expected to be highly persistent. If you have additional questions, please call.

xc: Bob Pavia
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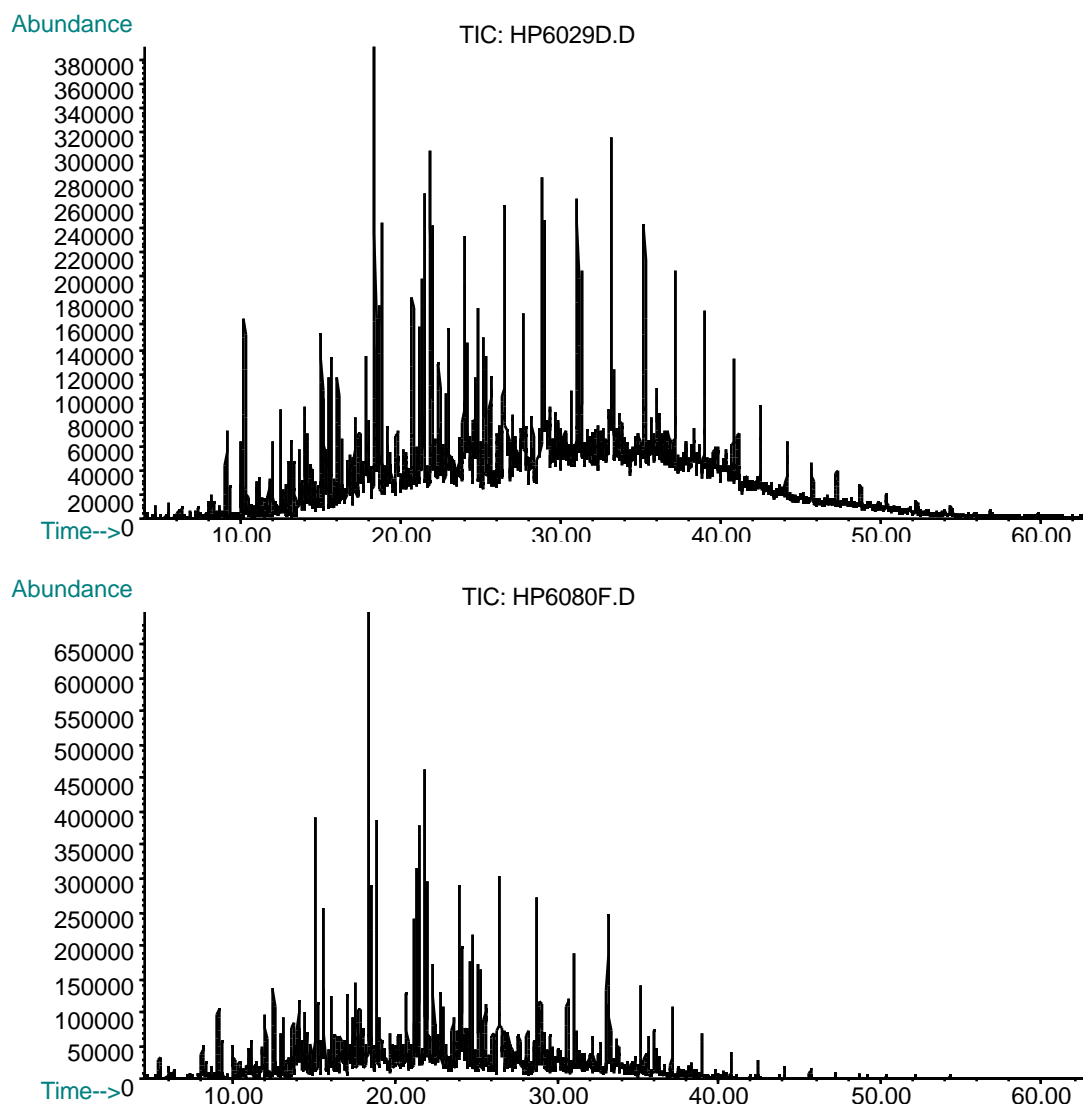


Figure 1. Chromatographic profile (TIC) of a “typical” Bunker C sample (top) and the sample submitted from the Buffalo 292 barge (bottom).

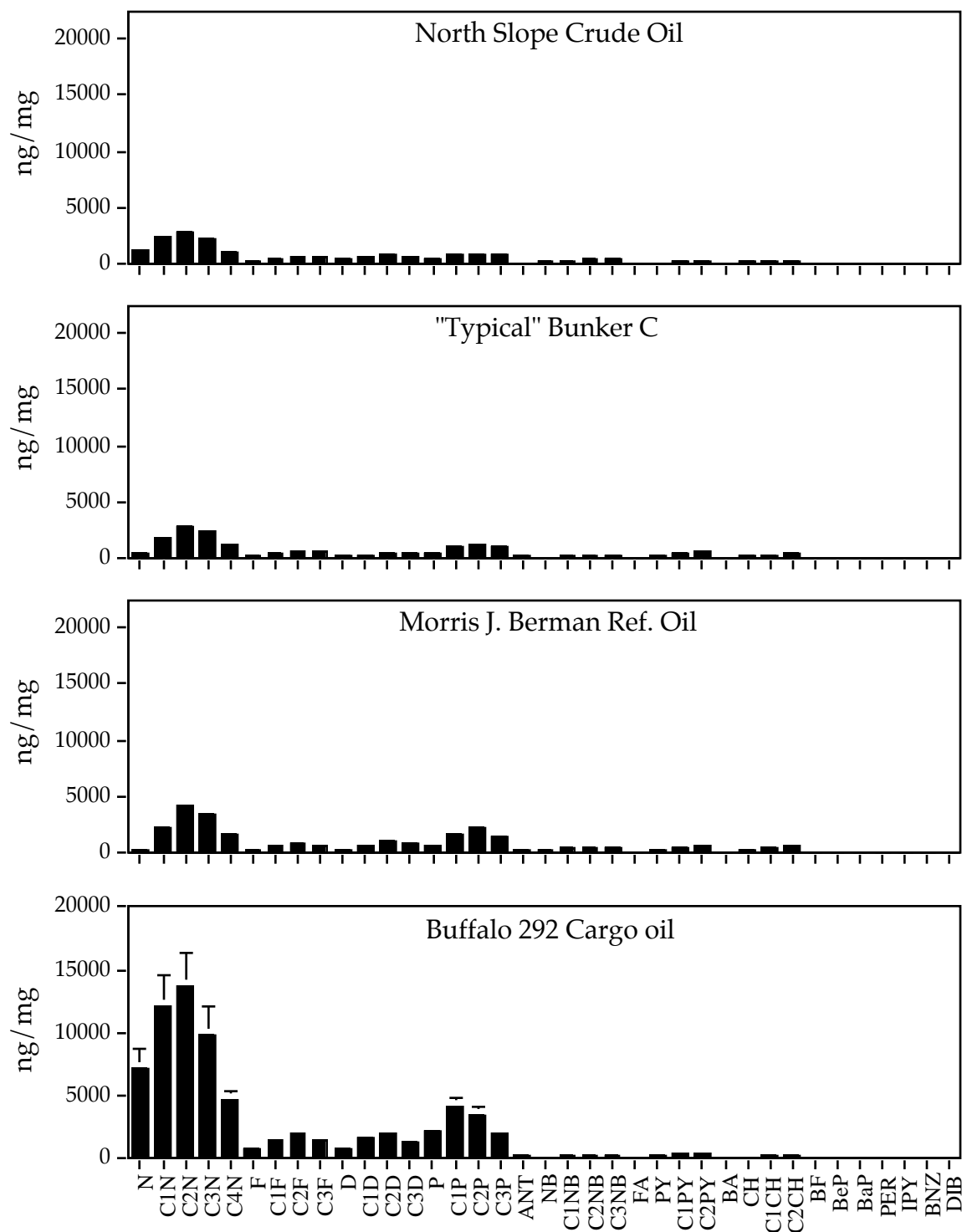


Figure 2. Aromatic hydrocarbon profile for NSC oil, a "typical" Bunker C, a cargo sample from the Barge *Morris J. Berman* incident, and the sample submitted from Barge Buffalo 292. Error bars represent standard error, n=4.